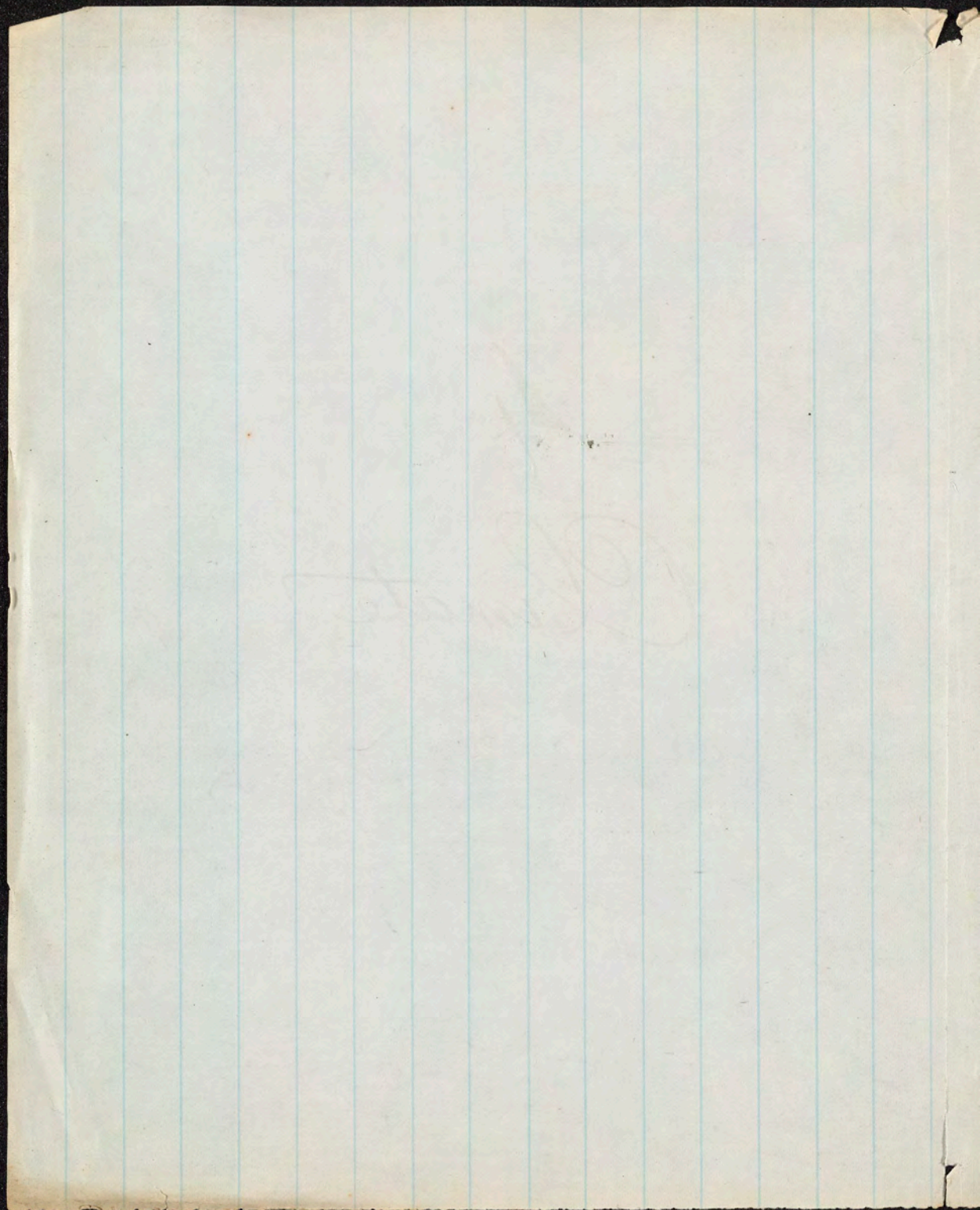
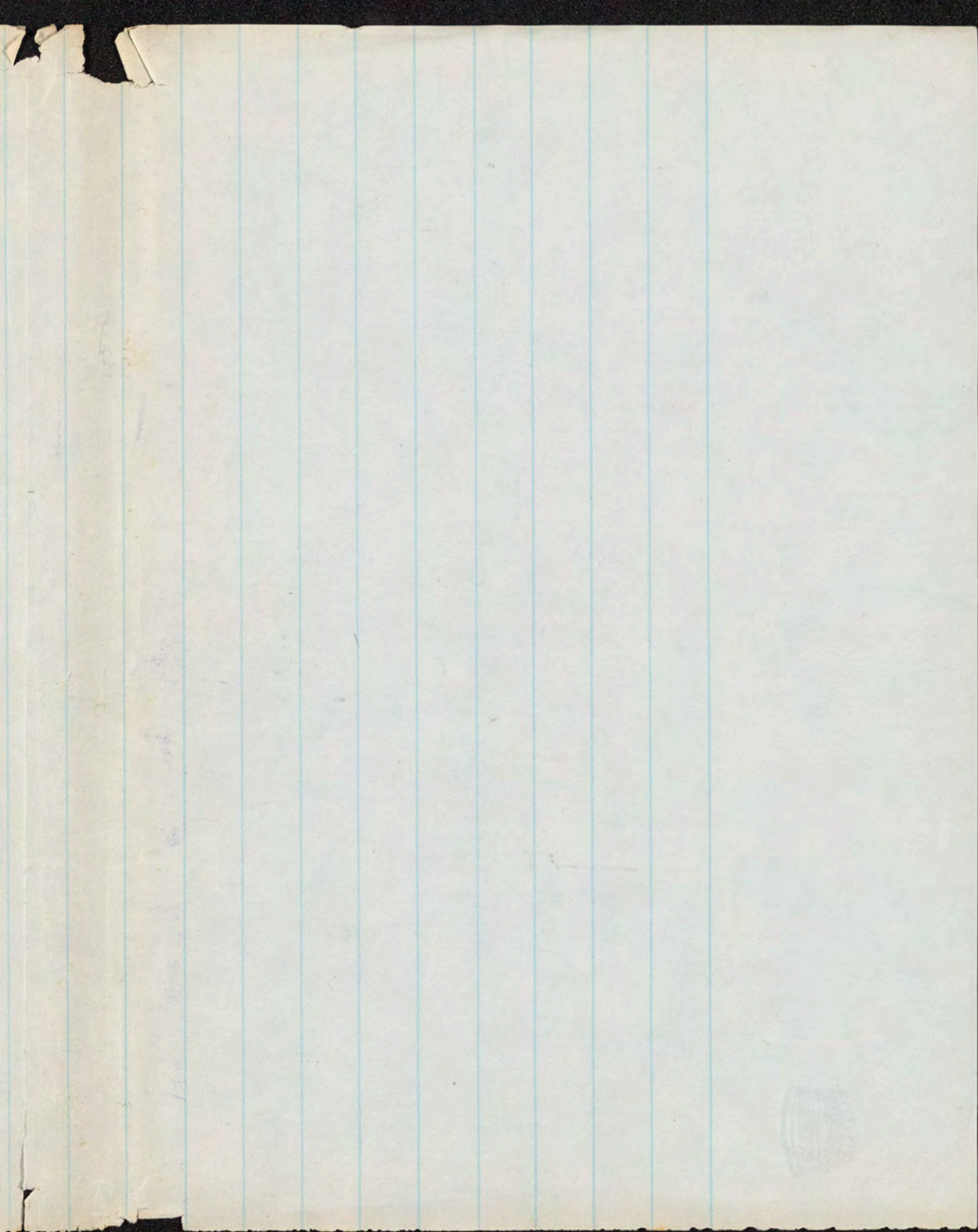


4

Climate.









HIGHEST HEAT.

120° in sun  
at 10 miles  
from shore.

ANCIENTS.

The highest heat is nearly the same in tropical and temperate climates. The highest reported is 146° at Bagdad. In the Great Desert, it is 134° <sup>to 140°</sup> in Maryland, in August 134° <sup>in</sup> 120° in the shade is the highest recorded. ~~It~~ is the lowest recorded.

Most of the ancients were aware of the influence of ~~climate~~ on health.

We distinguish hot & warm, and cold & cool seasons.

DISEASES OF WARM CLIMATES.

In the ~~former~~ the following diseases prevail: respiratory affections (croup, quincy, bronchitis, &c.), rheumatism, contagious diseases, erysipelas, puerperal fever &c.

DISEASES OF COLD CLIMATES.

In the ~~latter~~: stomach, bowels & liver complaints, malarial & yellow fever, & cholera &c.

CHOLERA INFANTUM.

The amount of cholera infantum in this city always depends on the temperature.

MORTALITY OF THE OLD

The mortality of old persons is greatest in cold weather; that



104

126

134

CAUSES  
OF  
CLIMATIC  
VARIATION.Causes of Climatic Variation

1. Latitude
2. Altitude.
3. Nearness to Oceans, Lakes, &c.
4. Outline of Coasts.
5. Nearness to Mountains or Deserts.
6. Prevailing Winds.
7. Oceanic Currents.
8. Rain & Clouds.

ELEMENTS  
OF CLIMATE.Elements of Climate

- |             |   |                   |
|-------------|---|-------------------|
| Temperature | { | 1. Annual Mean.   |
| Humidity    |   | 2. Extreme Range. |
|             |   | 3. Mutability.    |
| Atmosphere  | { | 1. Pure           |
|             |   | 2. Malarious      |

Add Table from p. 106, same day



young <sup>here,</sup> of children, <sup>especially as they</sup> in hot weather. human and other

Lecture XX.

CLIMATE.

Climate is the aggregate of the local conditions of a region which affect organic life.

LATITUDE.

Causes of variation (opposite page). The directness or obliquity of the sun's rays has effect on climate.

ALTITUDE.

Altitude has effect in any latitude. This may be illustrated by the perceptible differences of temperature in climbing a mountain. <sup>Because air is heated from the earth.</sup>

SNOW LINE

The snow line is different in different latitudes. One degree of heat is lost for every 300 ft. of ascent. <sup>Snow-line 18000 ft. Coriell 8000 alps.</sup>

OCEANS.

Oceans evidently affect. Water moderates temperature. It absorbs heat during the day, and gives it out at night. Hence all <sup>islands</sup> maritime places have milder climates than <sup>continents</sup> others. The variations of temperature are less extreme & less sudden. <sup>[oc currents here also]</sup>

OUTLINE

Continents are compared in respect to area in according to their

Britannia as well as small islands complete



Climate

Hot	30° N. & S. of the Equator.
Temperate	30° - 55° N. or S.
Cold	55° to pole N. or S.

2m  
BECKEREL'S  
CLASSIFICATION

Annual Mean.

<u>Torrid</u> . . . . .	80° Fahr.
<u>Warm</u> . . . . .	65° "
<u>Mild</u> . . . . .	60° "
<u>Temperate</u> . . . . .	50° "
<u>Cold</u> . . . . .	40° "
<u>Frigid</u> . . . . .	32° "
<u>Polar</u> . . . . .	0° "

[Isothermal Lines]



So is that of Asia, except <sup>107</sup>  
its ~~Southern~~ <sup>part</sup>, which is <sup>maritime</sup>.

its climate

coast lines. Africa has few indentations and is called continental. Europe has many more; <sup>maritime climate</sup> America ~~has the~~ ~~most~~ is called oceanic.

MOUNTAINS.

PERU

5. Mountains also, have effect. In the tropical part of S. America, <sup>prevailing</sup> the winds going westward <sup>after passing Brazil, which is fertilized with rain,</sup> are deprived of their moisture by the Andes. Hence Peru has no rain.

WESTERN TERRITORIES.

The same thing is seen in our Western territories. The <sup>air</sup> currents coming from the Pacific, <sup>against the mountains</sup> are deprived of their moisture making the country this side, almost a desert.

DESERTS.

6. The effect of deserts is seen in <sup>upper</sup> Egypt, which has no rain. Describe Egypt.

TRADE WINDS.

The trade winds were first discovered by Columbus. They are currents passing steadily from the east westward. (They are caused by unequal temperature of the air, modified by the revolution of the earth.) Expt. before?

RETURN CURRENTS.

There are always return currents.



X although the winds which are felt to be most  
 damp in the Eastern U. States, as here for instance, are  
 from the east, from the Atlantic Ocean. The storm-  
<sup>some of which, over the sea, especially, are</sup>  
~~movements~~, called now cyclones, have a law or laws  
 of their own. They generally travel from St. Louis to  
 New York in about 24 hours, & from New York to  
 Newfoundland in another 24 hours. The region of  
 low barometer is said, in the weather reports, to  
 travel in the same way; when it is very low at New York  
 it is apt to be high at St. Louis & Newfoundland. While  
 a storm is moving <sup>in a curve</sup> ~~eastward~~ eastward, or E. N. E., the winds  
 blow spirally inward towards the centre of the storm,  
 making a great circuit around that centre; the  
 wind blowing, on the whole, towards the central part  
 of the storm. The direction of this rotation, <sup>at the winds</sup> in the U. States,  
 is contrary to that of the hands of a watch; when a storm  
 moves in a rotary manner, in the same region, it <sup>travels</sup> ~~is~~ in the same  
 direction as the hands of a watch.



MONSOONS.

Monsoons in hot climates, are 6 mos. in one direction and 6 mos. in the opposite. They depend on the position of the sun changing with the seasons. <sup>when the land is hot, the wind blows from the cool ocean &c.</sup> They occur in the same manner as land and sea breezes, of day & night.

WINDS FROM W. & S.W.

On our continent, ~~the winds~~ <sup>the trade winds</sup> which bring storms, come from the west and south west; +

OCEANIC CURRENTS. 7.

Oceanic currents are complex. They are caused by differences of density of water. <sup>cold water</sup> by the difference of the specific gravities of cold & ~~hot~~ <sup>warm</sup> water. Dr. Carpenter's late investigations -

GULF STREAM.

They are often interrupted by continents. That which comes from the South & West of Africa, goes up the coast of South America. When it enters the Gulf of Mexico, it is turned off and sent over to Europe; Gulf Stream: its effects. Alaska.

Elements of Climate (page 104).

Classification (page 106). Beckers (106.)

Humboldt was the originator of

ISOTHERMAL LINES.



Dr J. G. Ross found a tribe of savages  
 living (isolated) in N. latitude 75°

~~At 1000 Miles! Alaska,~~  
~~Dr Ross~~ ~~Summer 1870~~  
 20th Lecture  
 1870

Next to the  
 Summer of 1871 hottest on record around Phila, Pa.:  
 Mean of August, Phila., 78° 77'; of June, July & August, 78.92°.  
 1864 & 5 had August alone over 79°; mean of the 3 months less than 79°.

\* In 1857, same place, 342 in. fall in 24 hrs.  
 Maranhao, Brazil, 280 in. per annum.

(\*) Some parts of Louisiana 68

State of  
 over 200

No. of rainy days in S. & W. of England 171 in  
 a year;  
 England altogether, 163  
 Lake region over 200

Western Canada. 34 inches  
 25 yrs.



— 10 —



Dr J. E. Ross found a tribe of savages  
living (isolated) in N. latitude 75°

Not a day in summer since 1872

20th Lecture 1870

\*  
↑

Tuesday July 17th 1866

Hottest Day for  
an N. N. 104° in shade when?

35 years

99° in shade

At front Lodge Office 3 PM 103° at 3 PM  
Next hottest day, July 20th 1855 99° in shade.

Next to the  
Summer of 1872 hottest on record around Phila, Pa.:  
Mean of August, Phila., 78.77; of June, July & August, 78.92°.  
1864 & 5 had August alone over 79° mean of the 3 months less than "

1872  
next  
hottest.

\* In 1857, same place, 342 in. fell in 24 hrs.

Aranhao, Brazil, 280 in. per annum.

#### THE HOTTEST MONTH.

The Philadelphia Medical Times presents some statistics from observations made in Philadelphia which go to show that the month of August, 1872, was the hottest August on record for the past eighty-three years. The mean temperature was 81.64 degrees, the highest point reached 97 degrees. The average mean temperature of the same month for the past eighty-three years was 73.33 degrees, and the highest mean temperature during all that time was that for the year 1872. A similar comparison of observations reveals the fact that last summer, as a whole, was the hottest on record. The mean temperature for the three summer months of 1872 was 80.09 degrees; the average for the past eighty-three years, 73.67 degrees; and the highest mean during that entire period was that of the year 1872.

Louisiana 68

Stop  
over 200 in

days in S. & W. of England 171 in  
altogether, 163  
region over 200

a year

Wetter Bremen

34 inches

all for 25 yrs



EXTREMES.

isothermal

EXTREMES.

shade in the  
California

HIGHEST  
EXTREMES.

103°; Philadelphia  
for a year  
at Key West.

SPRING WATER &  
DEEP CELLARS.

We may

temperature from spring water or from  
the temperature of deep cellars.

COLDEST  
EXTREMES.

The coldest temperature recorded, is  
-74° at Melville Island. In Phila., the  
coldest night was the Jan. 7th. 1866. -14°;  
St. Louis -18°; Bangor Me. -40°; Richmond -10°;  
Hartford -20°; Quebec, -40½° (Temperature of  
freezing mercury)

AMOUNT  
OF RAIN.

Amount of Rain: In Australia,  
there are few rainy days. It falls a-  
bout 92 inches in 2½ hours. In Vera Cruz,  
183 inches is the mean. Oregon, 60; Arizona  
California, 3 inches; Cayenne, 51; Phila. 42; London 20

DIFFERENCE  
BETWEEN  
THE CONTINENTS.

Comparing the continents, in the tropical  
climates, it is 77 in the old world, &  
115 in the new. In temperate climates  
10 for 34 years including 1870, Phila. 45.75 in. (Pub. Libr., Jan. 2 1870)

THE stations which the expeditions organised by the American  
government intend to occupy for the purpose of observing the  
transit of Venus will be mostly on the islands and coasts of the  
Pacific Ocean, from New Zealand on the south to the Aleutian  
Islands on the north, and from the Sandwich Islands on the east  
to China on the west. Telescopes and photographic apparatus  
for eight stations have been ordered from the firm of Alvan  
Clark & Sons, Cambridgeport, Massachusetts, and it is probable  
that nearly all the apparatus will be of American manufacture.

WE regret to announce the death of W. J. Macquorn Rankine, on  
Dec. 24, 1872, Professor of Engineering in Glasgow University.  
We hope next week to give an account of his life and labours.

WE regret to have to announce the death of Mr. Archibald  
Smith, LL.D., F.R.S., of Jordan Hall, Lanarkshire. Mr.  
Smith was born in 1814, studied at Glasgow and Cambridge  
Universities, being in 1836 Senior Wrangler and first Smith's  
Prizeman in the latter; the second wrangler was Bishop Colenso.  
He afterwards went to the Chancery bar, devoting his leisure to  
mathematical studies, his contributions to science being of high  
practical value. He was employed by Government to make a  
magnetic survey of the Antarctic regions, in connection with

Lat.  
le  
nd  
on,  
an  
279°  
m-



THE *Scientific American* contains some interesting statistics concerning the extremes of heat to which various parts of the world are subject. Probably the hottest country is Thibet, though its most southern part is  $30^{\circ}$  from the equator, its extreme summer temperature reaching to the height of  $150^{\circ}$ . The fact that the night temperature, even in summer, sometimes sinks to the freezing point, only serves to aggravate the discomfort of this extreme heat. Next come Senegal and Guadaloupe, with a maximum temperature of  $130^{\circ}$ , that of Persia being  $125^{\circ}$ , while the maximum of Calcutta and the delta of the Ganges is  $5^{\circ}$  less. In Cape Colony and the African diamond diggings the midsummer heat is  $105^{\circ}$ , that of Greece being only one degree less, while that of the comparatively far north city of Montreal is only one degree less than Greece, and one more than New York. In Great Britain, Siam, and Peru, the extreme does not exceed  $85^{\circ}$ , while that of Siberia is as high as  $77^{\circ}$ , two degrees higher than in Scotland, and four above that of Italy. In Patagonia and the Falkland Islands the highest is  $55^{\circ}$ , ten degrees above that of Southern Iceland. In Nova Zembla the maximum temperature is only  $34^{\circ}$ , two degrees above the freezing point of water.

found a tribe of savages  
750  
20th Lecture  
1870

35 years — 99° in shade  
New York City, July 20th 1855 — 99° in shade.  
103° at 300

Next to the  
Summer of 1872 hottest on record around Phila, Pa.:  
Mean of August, Phila.,  $78.77^{\circ}$ ; of June, July & August,  $78.92^{\circ}$ .  
1864 & 5 had August alone over  $79^{\circ}$ ; mean of the 3 months less than "  
\* In 1857, same place, 342 in. fell in 24 hrs.  
Maranhao, Brazil, 280 in. per annum.

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Louisiana 68  
days in S. & W. of England 171, in  
altogether, 163 a year,  
more over 200  
34 inches  
25 yrs.



111  
Cameron gives  $-92^{\circ}$ , in  $55^{\circ}$  N. lat.

isothermal lines.

EXTREMES.

HIGHEST  
EXTREMES.

SPRING WATER  
&  
DEEP CELLARS.

COLDEST  
EXTREMES.

AMOUNT  
OF RAIN.

DIFFERENCE  
BETWEEN  
THE CONTINENTS.

EXTREMES. The highest heat in the shade in the U.S. is  $113^{\circ}$  in Texas and California Next, St. Louis  $107^{\circ}$ ; Washington,  $103^{\circ}$ ; Philadelphia  $99^{\circ}$ . The highest mean for a year in the U.S. is  $146^{\circ}$  -  $+20^{\circ}$   $76^{\circ}$   $79^{\circ}$  at Key West. In Phila. & New York,  $52^{\circ}$ .

We may determine the average temperature from spring water or from the temperature of deep cellars.

The coldest temperature recorded, is  $-74^{\circ}$  at Melville Island. In Phila., the coldest night was the Jan. 7th. 1866.  $-14^{\circ}$ ; St. Louis  $-18^{\circ}$ ; Bangor Me.  $-40^{\circ}$ ; Richmond  $-10^{\circ}$ ; Hartford  $-20^{\circ}$ ; Quebec,  $-40\frac{1}{2}^{\circ}$  (temperature of freezing mercury). Difference on ground or near & 40 ft up =  $8^{\circ}$  or more.

Amount of Rain: In Australia, there are few rainy days. It falls about 92 inches in 2 1/2 hours. In Vera Cruz, 183 inches is the mean. Oregon, 60; California, 3 inches; Cayenne, 51; Phila. 42; London 20.

Comparing the continents, in the tropical climates, it is 77 in the old world, & 115 in the new. In temperate climates 10 for 34 years including 1870, Phila. 45.75 in. (Pub. Libr., Jan. 2 1870)



\*  $\wedge$  96 in. per annum (Humboldt) equatorial average.  
 ↘ At Cherapozie, India, during one S.W. mon-  
 soon, 605  $\frac{1}{4}$  in. fell. (See Enys)  
 ①

Not even  
 $\frac{1}{100}$  inch rainfall,  
 a ton of rain  
 per acre of  
 ground falls.

End of 20th Century  
 1866.

+  $\wedge$  Summer average in England 76°. Here 74°  
 Hunter says West Indies 10° less.

Egypt 97° Summer } average  
 70° winter

never below 40° there.

(about May 24<sup>th</sup>, highest Nile, cessation of plague there; &  
 its beginning in Constantinople)



COMPARISON  
OF TEMPERATURE

AMERICA  
COLDER.

LIMIT OF  
MALARIAL  
FEVERS.

HEAT  
FAVORABLE  
TO  
LUXURIANT  
ORGANIC LIFE.

ORIGIN  
OF MAN

78° 1/2 Aug 29  
78° July 26  
71° March 25 1/2

Canada

the most beautiful of our meteorological phenomena.  
The usual forms of lightning are the zigzag or forked sharply defined, — the sheet-lightning, illuminating a whole cloud, which it seems to open, — heat-lightning, not emanating from any cloud, but apparently diffused through the air and without report. There are also fireballs which shoot across the sky, leaving a train often visible for seconds and minutes. These last, when they project any masses to the earth, are termed aërolites.

Atmospheric electricity has much to do with the distribution of rain, the precipita-

Australia, etc.

Hot climates are favorable to luxuri-  
ant organic life. They produce  
the largest trees and animals.

They have a stimulating effect &  
on man. Man originally came  
from <sup>near</sup> the tropics. All great religions  
& civilization originated in them.  
However, they <sup>generally now</sup> produce a feeble



The general laws laid down in relation to rain are these:—

1. It decreases in quantity as we approach the poles.
2. It decreases as we pass from maritime to inland countries.
3. It decreases in the temperate zones on eastern coasts as compared with western coasts, but within the tropics it is the reverse.
4. More rain falls in mountainous than in level countries.
5. Most rain falls within the tropics.

For every  $\frac{1}{100}$  inch rainfall, a ton of rain per acre of ground falls.  
equatorial average.

using one S.W. mon-

Egypt

End of 20th century 1866.

Rainless countries are—  
Parts of Arabia, Persia, Mongolia,  
Upper Egypt — parts of  
Peru, Guatemala, New Mexico  
Desert of Gobi in Asia—

Summer average in England  $76^{\circ}$ . Here  $74^{\circ}$   
Hunter says West Indies  $10^{\circ}$  less.

Egypt,  $97^{\circ}$  Summer } average  
 $70^{\circ}$  winter }

run below  $40^{\circ}$  there.

about May 24<sup>th</sup>, highest Nile, cessation of plague there; & its beginning in Constantinople



COMPARISON  
OF TEMPERATURE

AMERICA  
COLDER.

LIMIT OF  
MALARIAL  
FEVERS.

HEAT  
FAVORABLE  
TO  
LUXURIANT  
ORGANIC LIFE.

ORIGIN  
OF MAN

Mean temperature at Cairo,  
Egypt, for 4 years:  
Jan. 58 1/2° F. Feb. 57° March 55 1/2°  
April 70° May 77° June 81 1/2° July 86°  
August 82 1/2° Sept. 82 1/3° Oct. 78° Nov. 69°  
Dec. 59°

Australia, S. E.  
Hot climates are favorable to luxuri-  
ant organic life. They produce  
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They have a stimulating effect &  
on man. Man originally came  
from the tropics. All great religions  
& civilization originated in them.  
However, they <sup>generally now</sup> produce a feeble



rain  
acre of  
ground falls

may

←

willow

of 20<sup>th</sup> Section

1866

Summer average in England  $76^{\circ}$ . Here  $74^{\circ}$   
 Dr Hunter says West Indies  $10^{\circ}$  less.

Egypt  $97^{\circ}$  Summer } average  
 $70^{\circ}$  winter }

now below  $40^{\circ}$  there.

(about May 24<sup>th</sup>, highest Nile, cessation of plague there; &  
 its beginning in Constantinople)



COMPARISON  
OF TEMPERATURE

AMERICA  
COLDER.

LIMIT OF  
MALARIAL  
FEVERS.

HEAT  
FAVORABLE  
TO  
LUXURIANT  
ORGANIC LIFE.

ORIGIN  
OF MAN

Australia, etc.  
Hot climates are favorable to luxuri-  
ant organic life. They produce  
the largest trees and animals.  
They have a stimulating effect <sup>relaxing</sup> ~~on~~ man. Man originally came  
from <sup>near</sup> the tropics. All great religions  
& civilization originated in them.  
However, they <sup>generally now</sup> produce a feeble



all the great systems of religion  
have had tropical origins;

In Persia, Zoroaster; Confucius in China;  
Buddha in India; paganism in Greece;  
Christianity, in Syria; Mahometanism  
in Arabia. Beauregard, Because earlier

Volney asks - Were the old Assyrians  
indolent tropical people? Or the Medes?

Peisians of Cyprus? Phoenicians - Car-  
thaginians - Romans - Greeks?"

But it is assumed, - "Where are they  
now?"

now below  $40^{\circ}$  there.

(about May 24<sup>th</sup>, highest Nile, cessation of plague there; &  
its beginning in Constantinople)

rain of  
acres of  
ground falls  
average.

W. allon-

20<sup>th</sup> Sept  
2, 1866.

Here  
 $74^{\circ}$



it is 34 in the old, & 39 in the new.  
Hence this continent has an advantage over the old.

of similar location  
on diff. planet

COMPARISON  
OF TEMPERATURE

Comparison of temperature; in the U.S. it is colder than the same latitude of Europe. In Phila., it the average is 53°; Naples 62°; Peking, 52°. These places have about the same latitude.

AMERICA  
COLDER.

The amount of land to the north of us makes our continent colder.

Alaska  
LIMIT OF  
MALARIAL  
FEVERS.

Another reason is the Gulf Stream. One effect of this difference is that the limit of malarial fevers is higher in Europe than in America. In Europe, it is 47° 67½°; in America 47½°; Australia 57° S.

HEAT  
FAVORABLE  
TO LUXURIANT  
ORGANIC LIFE.

Hot climates are favorable to luxuriant organic life. They produce the largest trees and animals.

ORIGIN  
OF MAN

They have a stimulating effect & <sup>relaying</sup> on man. Man originally came from <sup>near</sup> the tropics. All great religions & civilization originated in them. However, they <sup>generally now</sup> produce a feeble



# Can climates be changed?

Dr. Ken has long 2 years in  
 quaternary says that rain follows  
culture of the land there, into a north dump.  
 the culture has planted millions of trees.  
 Extension of railroads destroys millions of  
 trees in this country. Forest-  
culture will soon become  
needful.

Elmayer

of 21<sup>st</sup> Lecture

Dr. Reusch thought the great amount of pictures  
 in Philada. after 1778 to be owing to the British  
 with them - so many trees all around the city.

End of 24<sup>th</sup> Lecture, 1873

End of 9<sup>th</sup> Lecture, 1872.

Lecky



DISEASES  
OF  
HOT  
&  
COLD  
CLIMATES.

TEMPERATE  
CLIMATES.

ACCLIMATION.

INDIA

Lord Str  
that aft  
Permian  
of Belgr  
to be a  
a Cond  
Col. B  
replant  
has a  
So

under the  
Egypt in the interest of  
that we may  
wasteful unnece  
of forest north  
space that  
An Egypt  
of trees by Moha  
said to have been for

feet.

BONDS

AX,

ad Min-  
ly,

ertible,

UND.

York or  
to in

lent Penn-

do, Peoria

ld over 9 per  
are fully  
6 1/2 per cent.

f the Road as

as fast as the same is completed and in successful operation. Over two and a half millions of dollars have been expended on the Road. Eighty-three miles are about completed and equipped, and already show large earnings; and the remainder of the line is rapidly progressing toward completion.

The State of Iowa, through which this road runs, is one of the richest agricultural sections in America. Its large population, extending with surprising rapidity, and its immense yield of grain, pork, wool and other agricultural products, create a pressing demand for the construction of this road, which affords the best possible guarantee for the bondholders, especially as the line runs through the wealthiest and most thickly populated section of the State.

The road also runs through the rich and growing State of Minnesota. Reference to the map of the United States will show that it traverses the most enterprising and growing portion of the West, and forms one of the great trunk lines in direct communication with New York, Chicago and St. Louis, being to the latter city ninety miles nearer from Northern Iowa and all portions of the State of Minnesota than by any other road now built or projected, and also the nearest route from Central and Southern Iowa.

The road is opened for local traffic as rapidly as constructed, and thus RECEIVES EARNINGS ON ITS COMPLETED SECTIONS GREATLY IN EXCESS OF THE AMOUNT NEEDED TO PAY THE INTEREST UPON ITS BONDS BEFORE THE ROAD IS FINISHED. The buyer of these Bonds is therefore guaranteed, by a great business already in existence on the route of the road, as well as by now current earnings, and has not to risk any of the contingencies which always attend the opening of roads in a new and unsettled country.

A limited quantity only of these Bonds are now offered at 95.

After a thorough investigation of the above enterprise, we recommend these Bonds as a first-class investment, affording absolute safety, and paying an unusually liberal rate of interest. All marketable securities at their full price, free of commission and express charges, received in payment. Pamphlets and maps furnished



(3)

In Australia, District  
 of Ballarat, since "De-  
 foresting" began in 1863, from  
 then to 1868, a seq. decrease  
 of rainfall went on - from  
 37.27 in. to 14.23 in. had  
 occurred. The government then  
 appointed a Inspector of  
 forests -

Cutting down of forests during  
 our great war has altered our  
 climate & as to make the seasons  
 vary, in temperature & rain, from  
 the averages of the former century.  
 We will soon need measures to pre-  
 serve our forests from destruction.

be changed?

X  
 X

Elmyer

21<sup>st</sup> Lecture

End of 24<sup>th</sup> Lecture, 1873

End of 9<sup>th</sup> Lecture, 1872.

↓ Lerday -

X Dr. Rees thought the great amount of sickness  
 in Philada. after 1778 to be owing to the British  
 cutting down so many trees all around the city.

extension of  
 the settlement  
 of the  
 culture of the  
 soil

SDs at Runt  
 1869 note ran



DISEASES  
OF  
HOT  
&  
COLD  
CLIMATES.

TEMPERATE  
CLIMATES.

ACCLIMATION.

INDIA

Lord Stratford  
that after spec  
Permian to cus  
of Belgrade, the  
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Col. Balfour  
replanting of  
has re-opened

So that it  
under the influence  
but in the interest of the C  
that we may  
wasteful, unnece  
of forest north  
space that  
Lower  
in Egypt,  
of trees by Moha  
said to have been for

DREXEL & CO.,

No. 34 South Third Street.

PER CENT. GOLD BONDS

AT 95,

FREE OF GOVERNMENT TAX,

ISSUED BY THE

Burlington, Cedar Rapids and Min-  
nesota Railroad Company,

First Mortgage and Convertible,

AND PROTECTED BY A

LIBERAL SINKING FUND.

Interest Payable in Coin at New York or  
London. Principal Payable in  
Coin in Fifty Years.

TRUSTEES.

J. EDGAR THOMPSON, President Penn-  
sylvania Railroad Company.

CHAS. L. FROST, President Toledo, Peoria  
and Warsaw Railroad Company.

These Bonds, at present price of gold, yield over 9 per  
cent. interest, and as an investment they are fully  
secured as U. S. 5-20's, which now only pay 6 1/4 per cent.  
in currency.

They are only issued upon each section of the Road as  
as fast as the same is completed and in successful opera-  
tion. Over two and a half millions of dollars have been  
expended on the Road. Eighty-three miles are about  
completed and equipped, and already show large earn-  
ings; and the remainder of the line is rapidly progress-  
ing toward completion.

The State of Iowa, through which this road runs, is  
one of the richest agricultural sections in America. Its  
large population, extending with surprising rapidity,  
and its immense yield of grain, pork, wool and other ag-  
ricultural products, create a pressing demand for the  
construction of this road, which affords the best possible  
guarantee for the bondholders, especially as the line  
runs through the wealthiest and most thickly populated  
section of the State.

The road also runs through the rich and growing State  
of Minnesota. Reference to the map of the United  
States will show that it traverses the most enterprising  
and growing portion of the West, and forms one of the  
great trunk lines in direct communication with New  
York, Chicago and St. Louis, being to the latter city  
ninety miles nearer from Northern Iowa and all por-  
tions of the State of Minnesota than by any other road  
now built or projected, and also the nearest route from  
Central and Southern Iowa.

The road is opened for local traffic as rapidly as con-  
structed, and thus RECEIVES EARNINGS ON ITS  
COMPLETED SECTIONS GREATLY IN EXCESS  
OF THE AMOUNT NEEDED TO PAY THE IN-  
TEREST UPON ITS BONDS BEFORE THE  
ROAD IS FINISHED. The buyer of these Bonds is  
therefore guaranteed, by a great business already in exist-  
ence on the route of the road, as well as by now current  
earnings, and has not to risk any of the contingencies  
which always attend the opening of roads in a new and  
unsettled country.

A limited quantity only of these Bonds  
are now offered at 95.

After a thorough investigation of the above enter-  
prise, we recommend these Bonds as a first-class invest-  
ment, affording absolute safety, and paying an unusually  
liberal rate of interest. All marketable securities at  
their full price, free of commission and express charges,  
received in payment. Pamphlets and maps furnished



(3)

In Australia, District  
 of Ballarat, since de-  
 foresting began in 1863 from  
 then to 1868, a reg. decrease  
 of rainfall went on - from  
 37.27 in. to 14.23 in. had  
 occurred. The government then  
 appointed a Inspector of  
 forests -

Cutting down of forests during  
 our great war has altered our  
 climate & as to make the seasons  
 vary, in temperature & rain, from  
 the averages of the previous century.  
 We will soon need measures to pre-  
 -serve our forests from destruction.

the extension of  
 the settlement  
 of the  
 valley of the  
 Colorado  
 1850s at Point  
 1869 note

Dr. Rees thought the great amount  
 in Philada. after 1778 to be owing to the Br  
 with loss of many trees all around the city

# STRANGE NATURAL PHENOMENON.

## Physical Changes in the Great American Desert.

The Inland Empire has the following remarkable statement concerning the process of change going on all over the great inland desert between California and Missouri. It says:

For some time past there has been a question before the people of this basin and of the plains east of the Rocky Mountains, that has as yet failed to be satisfactorily answered. It is: Why are the streams carrying more water than in former years? The great plains are fast losing their arid nature, and through them are running streams in places where twenty years ago there was not a drop of water; and where at that time there were small streams they are now very much enlarged. In many cases this change has been of great value, as it has given to the traveler a supply of water that had previously been denied.

When the first emigrants crossed the plains to California, the great objection urged to the trip was the scarcity of water on the great part of the route. Within a few years this has been all changed, and in the beds of old streams that were dry when first found there is now water for all the purposes required.

The Laramie plains are not now destitute of water, whereas some years ago there was none, and the traveler had to carry water on passing over them. There can be no doubt that for the last ten years there has been a continued increase of water throughout the whole desert country between the Missouri and the Sierra Nevada. The Arkansas was dry in 1862 from the Pawnee Fox to the Cimarron crossing, and previous to that time the Pecos was dried up so that at many places the inhabitants were obliged to dig for water. And the Moro Valley and Plains were at that time almost destitute of vegetation. Now the vegetation is luxurious, and it is one of the very best wheat-growing sections.

Denver was built on the banks of an extinct creek, which it was supposed would remain dry, but after the settlement, to the astonishment of the people, it became quite a stream, and is now crossed by bridges. The Huerfano, the Roya Pecos, and others that were dry during the summer months ten years ago, are now constantly running in fair streams. We are satisfied that along the whole line of the Union Pacific Railroad there is much more moisture in the earth than there was only a few years since. Again, Salt Lake is seven feet higher than it was ten years ago, and it is constantly rising, and it has been urged by those who have paid attention to the subject, that the rise of water there would produce a solution of the Mormon question before Congress would act upon it. When the Salt Lake shall rise a few feet higher we shall look for its overflow to reach the Shell Creek range, as evidently at one time as water did cover what is now only an arid valley, not direct in its course, but cut up with ranges, still the continued valley can be traced. This great increase of water will work a great revolution in the opinion of the people as to the capacity of the great plains for agricultural purposes.

The only reason why the great plains cannot be made into good fruit farms is the lack of water and timber, as the land in richness has no superior. The increase of water of which we have spoken will do away with one objection, and the discovery of coal over a distance east of Salt Lake for over six hundred miles will obviate the other. The man who travels over the Union Pacific Railroad twenty years from this time will find that the sage brush has given way to crops of all kinds growing in the greatest luxuriance, and that the sturdy farmers with happy homes have taken the places of the wandering red men. In our own State this increase of moisture has been noticed, and the old settlers do not hesitate to say that in many places the streams have increased more than one-fourth in size during the past five years, and in some places where there was no water then there is now small but constantly running streams.

End of 9th Lecture, 1872.



DISEASES  
OF  
HOT  
&  
COLD  
CLIMATES.

TEMPERATE  
CLIMATES.

ACCLIMATION.

INDIA

Lord Stratford de Redcliffe testified  
that after speculators had obtained  
permission to cut down the woods  
of Belgrade, the contract had  
to be annulled; as the reservoirs  
at Constantinople began to fail.  
Col. Balfour narrates how the  
replanting of trees in India  
has re-opened its lost springs.

So that it need not be only  
under the influence of poetic sentiment,  
but in the interest of the common  
advantage of mankind,  
that we may cry, <sup>Against all</sup>  
wasteful, unnecessary destruction  
of forest growth — "Woodman,  
spare that tree."

<sup>Lower</sup> In Egypt, the planting of some millions  
of trees by Mohammed Ali Pasha is now  
said to have been followed by a decided increase of  
rain.



(From Lesley, "man &" - p. 142) (2) (1)

The Kalahari desert in S. Africa:

H. A. (Jas. L. Wilson) is extending, its rivers dry  
up, under the destruction of timber by  
colonists & natives. Iron axes  
are now plenty among both, saws ignorantly  
used.

The country of Hauran, east of  
Damascus, abounding in ruins of great  
cities, Cyril Enchan asserts to have  
become uninhabitable from the wasteful  
destruction of forests. Sir Rod. Murchison  
says that the river Volga has  
lost in magnitude with the clearing of  
the upper country. Genl. Humphreys &  
Abbott show the same of the Mississippi.  
During the French Revolution wasteful felling  
of trees in the Pyrenees was threatening  
to make South France desert, when  
the first Napoleon restored the ancient law  
to protect the forest. — over —

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there was no water then there is now small  
but constantly running streams.

[End of 1 volume, 1872.]



The rainless regions, not deserts, are parts of Guatemala, the table-land of Mexico, the Peruvian coast, parts of Morocco, Egypt, Arabia, Persia, etc.

The electric character of the air is another subject of interest, and a leading one in Meteorology. What can be more magnificent, what more awful, than those storms of lightning and thunder which are witnessed sometimes even in our own latitudes?

Faraday, who as a chemist and philosophical writer is of the highest authority, professes to have demonstrated that one single grain of water contains as much electricity as can be accumulated in eight hundred thousand Leyden jars, each requiring to charge it thirty turns of the large machine at the Royal Institution.

It is not intended that this astounding statement should be received without some grains of allowance; but a very elegant and scientific writer, who adopts it without hesitation, adds, "We can from this crystal sphere [of water] evoke heat, light, electricity in enormous quantities, and beyond these we can see powers or forces for which, in the poverty of our ideas and our words, we have not names."

Flashes of electricity have been detected, during warm, close weather, issuing from some species of plants. The Tuberosa and African Marigold have been seen to emit these mimic lightnings. (Goethe is the authority for this.) To atmospheric electricity we doubtless owe the coruscations of the Aurora, one of

race of men. The  
man's intellect

Diseases of the  
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Int cold  
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The highest  
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INDIA

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less in that of the trades. There are, however, tropical countries of great extent where rain is scarcely ever seen.

The influence of man upon rain is seen in the progress of civilization, the destruction of forests, and the drying-up of meres, swamps, and water-courses.

Forests undoubtedly affect the distribution of rain, and the supplies of streams and springs. Their cooling influence precipitates the vapor passing over them, and the ground beneath them not getting heated does not readily evaporate moisture. Lands, on the contrary, which are cleared of forests become sooner heated, give off larger quantities of rarefied air, and the passing clouds are borne away to localities of greater atmospheric density.

The Canary Islands, when first discovered, were thickly clothed with forests. Since these have been destroyed, the climate has been dry. In Fuerteventura the inhabitants are sometimes obliged to flee to other islands to avoid perishing from thirst. Similar instances occur in the Cape Verdes. Parts of Egypt, Syria, and Persia, that once were wooded, are now arid and sterile deserts. *Moh. Ali planted 20 million of trees.*

In the temperate zones these results are not so immediately apparent. It is now much in doubt whether the climate of our country has changed its character within the last two hundred years. Jefferson and Dr. Rush both contended that it had. Our oldest inhabitants assert that in their day our winters began nearly two months earlier than they do now.

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End of 9 volume, 1872.

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Dr. R. M.  
in Philada.

X Dr. R.  
in Philada.



Heat is depressing to  
man's <sup>physical and</sup> intellectual powers.

Diseases of the tropics are, affect-  
ions of the liver, stomach and bow-  
els, & malar

Int. cold & re-  
disease, but  
every thing  
typhoid fer-  
vail.

Total.....	15,111	3409	653	349	19,582	19,540
CENSUS OF SCHOOL CHILDREN. - The cen- sus of the school children, recently taken by the police, has not yet been prepared for pub- lication. The following is given as the result of the census in the Twenty-second Ward, with the exception of the eighth precinct, there the number being estimated:						
Precincts.	Number of Children.					
First.....	277					
Second.....	450					
Third.....	777					
Fourth.....	890					
Fifth.....	928					
Sixth.....	554					
Seventh.....	398					
Eighth (about).....	700					
Ninth.....	658					
Tenth.....	292					

Cholera  
not much  
stunted;  
Scurvy,  
me pre-

The highest civilization is in  
the temperate climates. Here the  
strongest races of men exist.

The variations of the thermometer  
are greater. Can climate ever be changed?

An important question is  
that of acclimation. Is it possible to  
colonize <sup>anywhere</sup> without deterioration?

Prof. R. Knox says it is not. They says that  
the Anglo-Saxon race in Ameri-  
ca is <sup>running out</sup> ~~generating~~. We don't admit it.

It has been considered impos-  
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passing clouds are borne away by means of greater atmospheric density.

The Canary Islands, which were formerly covered, were thickly clothed with forests. Since these have been destroyed the climate has been dry.

When the inhabitants were obliged to flee to other islands, and the planters one after another abandoned their farms, as they yielded them nothing, the only way to account for the great change is that nearly all of the trees have been cut down, and the amount of rain which used to fall has fallen since has not been enough to keep the land refreshed.

In the temperate zones these results are not so immediately apparent. It is now much in doubt whether the climate of our country has changed its character within the last two hundred years. Jefferson and Dr. Rush both contended that it had. Our oldest inhabitants assert that in their day our winters began nearly two months earlier than they do now.

its rivers dry  
destruction of timber by  
Iron axes  
but, have ignorantly

AN illustration of the influence which trees have upon rain is given by a gentleman who has just visited the island of Santa Cruz, West Indies. Twenty years ago he was there, and the island was a lovely garden throughout its length and breadth. Trees native to it, and flowers, everywhere flourished and the soil was fertile. When his last visit was made he found a third of the island a desert waste; the soil was parched and barren on the seashore. The destruction of vegetation is steadily going on, and the planters one after another abandon their farms, as they yield them nothing. The change is that nearly all of the trees have been cut down, and the amount of rain which used to fall has fallen since has not been enough to keep the land refreshed.

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sterile

Dr R. S. Mearns  
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End of lecture, 1872

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Dr R  
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with him



Heat

race of men. Heat is depressing to man's intellectual powers.

DISEASES  
OF  
HOT  
&  
COLD  
CLIMATES.

Diseases of the tropics are, affections of the liver, stomach, and bowels, & malarial & yellow fevers, Cholera.

In cold regions there is not much disease, but the men are stunted; every thing is depressed. Scoury, typhoid fever & pneumonia prevail.

Development of man, and the great progress

TEMPERATE  
CLIMATES.

The highest civilization is in the temperate climates. Here the strongest races of men exist.

The variations of the thermometer are greater. Can climates ever be changed?

ACCLIMATION.

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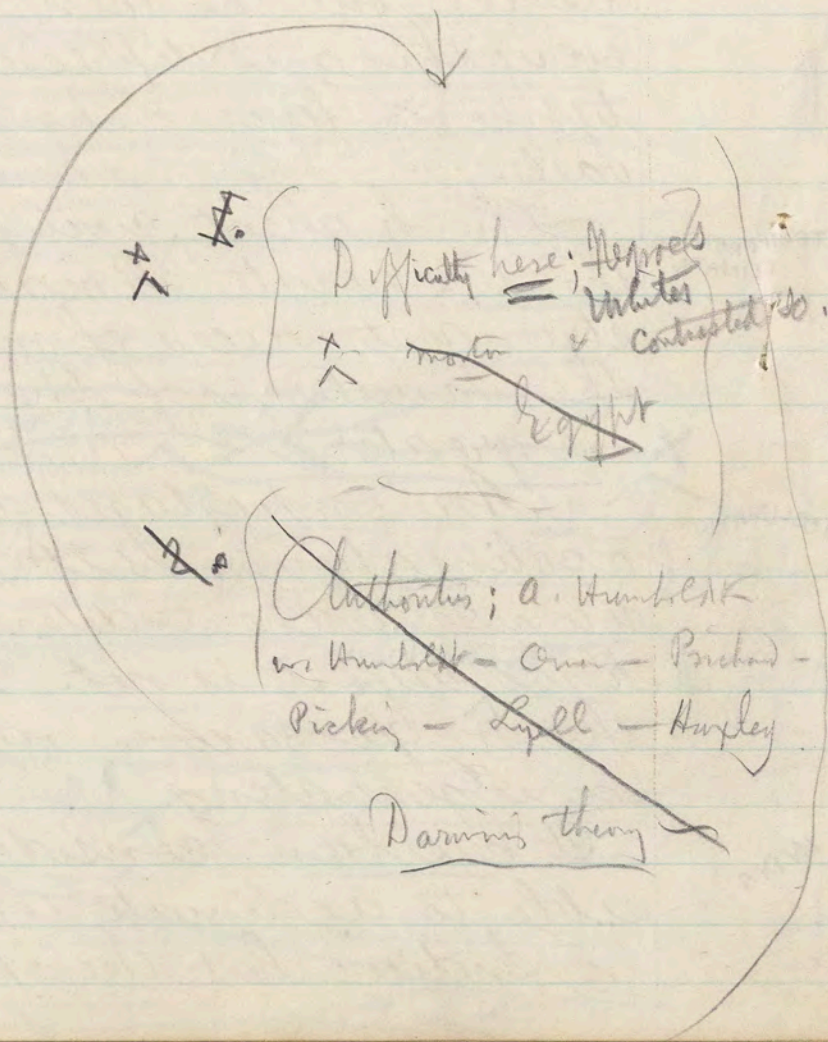
INDIA

It has been considered impossible to acclimate the English in India; but the opinion is



# Effects of Climate on Races

End 20<sup>th</sup> Lecture  
1869.





UNITY  
OF  
MANKIND

HOW  
TO DETERMINE  
THE  
QUESTION

ANATOMICAL  
EXAMINATION.

INTERMIXTURE.

NATURAL  
HISTORY.

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Definite crossed races — separate  
multiplying: (Quatrefages)

Paulistas of St. Paul, Brazil;

Indians & (Spaniards or Portuguese?) —

People of Chile  
another ship

Papuanas of New Guinea

Kafusos S. Am., Indian Negroes

Erignas, Dutch & Hottentots

Pitcairn islanders — sailors of

Bounty, 1790 — with Polynesians —

9 English men — 6 Polynesian men & 6 ditto women —

Natural assassinations left in 1793 but

4 white men — the Polynesian women & some

children; 17 left, only 2 English left.

Yet, in 1856, 189 persons; more than  
a number of them

tripled in 31 years. Soon after, deported

history lost.

Quatrefages

— visited 1870, a number  
of families then left.

Races

Negros  
Whites  
crossed

Humboldt

Prichard

Huxley



gaining ground  
sible. He

UNITY  
OF  
KIND

Another in  
~~which~~ which  
of acclimat<sup>tion</sup>  
species?" If

HOW  
TO DETERMINE  
THE  
QUESTION

To determine  
in several

1. Compare
2. Reproducti
3. Natural h
4. Historical
5. Traditions.
6. Language.

ANATOMICAL  
EXAMINATION.

1st. We find  
differences betwe

INTERMIXTURE.

~~only~~. Different races "can introo  
intermarry and produce children.  
This is witnessed in Mexico and  
S. America, - as well as in our Southern states. \*

NATURAL  
HISTORY.

2ndly. We see just as great differ-  
ences among species of animals  
which are derived from the same  
original stock. Thus there are

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\* Perier (actual) opposes  
 the common theory <sup>so does Voisin</sup>  
 of consanguinity. <sup>He</sup> urges  
 a brother that inter-  
 -mixture always injures  
 races. Quatrefages  
 denies this. — Brazil <sup>d.g.</sup>

(Martin de Moussy,  
 careful description, ordering  
 the Eormans of Pass-  
 guay, a colony of  
 1535, yet  
 unchanged from the  
Eormans of 1535.)

— races — separated  
 (ages)  
 St. Paul, Brazil;  
 (Portuguese?) —

— the Eumia  
 S. am., Indian Negroes  
 Dutch & Hottentots  
 — islanders — sailors —  
 + Polynesian —

Races

Herpes  
 Unites  
 contrasted

9 English men — 6 Polynesian men & 6 ditto women —  
 Mutual assassinations left in 1793 but  
 of white men — the Polynesian women & some  
 children; 1799, only 2 English left.  
 Yet, in 1856, 189 persons; more than  
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— visited 1870, a number  
 of families there yet.

Quatrefages

— Humboldt  
 — Prichard  
 — Huxley



gaining ground  
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UNITY  
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HOW  
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which  
of acclimat<sup>tion</sup>  
species?" If

To determine  
in several

1. Compare
2. Reproductive
3. Natural history
4. Historical argument.
5. Traditions.
6. Language.
7. Mind
8. Instincts

ANATOMICAL  
EXAMINATION.

INTERMIXTURE.

We find no anatomical differences between different races.  
Different races can intermarry and produce children. This is witnessed in Mexico and S. America, - as well as in our Southern States.

NATURAL  
HISTORY.

3rdly. We see just as great differences among species of animals which are derived from the same original stock. Thus there are



Anthropological Review

Nov. 1863, quotes the races — separately  
Bulletin of Société d'Anthropologie of Paris —  
Report of a Commission to St. Paul, Brazil;  
of inquiry on the population of  
Chile — (Punta Arenas) (State of Chile?) —

that of 1,300,000 pop., 20,000 of whom  
were foreign, only 10,000 were  
pure Indians. Some mulattoes  
many mestizos, no negroes.  
Am., Indian Negroes

guano, a colony of  
1535 to 1540  
unchanged from the  
(German, French)

Dutch & Hottentots

islanders — sailors of

+ Polynesians —

Negroes  
Whites  
Contested

1/2

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Ambled

— Birchard —

— Huxley

very



gaining ground that it is possible. Florence Nightingale asserts it to be so.

UNITY  
MAN OF KIND

Another interesting question ~~is~~ which bears on capability of acclimation, is "is man one species?" If he be so, universal acclimability follows of course.

HOW  
TO DETERMINE  
THE  
QUESTION

To determine this, we <sup>properly</sup> proceed <sup>must</sup> in several ways.

1. Compare races anatomically.
2. Reproductive union.
3. Natural history of animal species.
4. Historical argument.
5. Traditions.
6. Language.
7. Mind
8. Modifying causes

ANATOMICAL  
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1st. We find no anatomical differences between different races.

INTERMIXTURE.

2ndly. Different races can intermarry and produce children. This is witnessed in Mexico and S. America, - as well as in our Southern states.

NATURAL  
HISTORY.

3rdly. We see just as great differences among species of animals which are derived from the same original stock. Thus there are



2 chief factors in animal variation;

1. Climate — 2. Domestication: in man, for the latter  
we have different degrees of conservation

Universal traditions:

Creation of one pair; Deluge leaving only one family;  
Sacrifices, blood to appease divinity; A Divine deliverer  
assuming the form of man. — (Circumcision).

8 day in 7

Shawnee traditions  
Hemlock Hatched of dove  
you are direct ancestor  
this tradition  
origin N.W.  
Other Amer. traditions  
Ind. migrations



diversities

great differences among dogs, pigeons, horses &c. all certainly of common ancient origin.

HISTORY.

4thly. History shows that nowhere has an indigenous race been found. Even "prehistoric" races, Lecture XXI. migratory.

TRADITION.

Traditions confirm the testimony of history. Every race had traditions which coincided, as <sup>concerning</sup> the deluge, &c. Migrations.

LANGUAGE.

Language is a powerful argument. There are close affinities in all languages. There is a physiology of language. Max Müller & Darwin.

Johnes  
GRADATION  
OF RACES.

The greatest argument for the unity of man, is the gradation of races. Humboldt was convinced of this. The contrast which is seen in America is the exception, not the rule.

AFRICA.

Africa alone will illustrate this. All Africans are not negroes. They are a minority.

EGYPTIANS.

The Egyptians are a transition between the negro and the white man. Sull nose, thick lips, characterized them,







BERBERS.

but they were by no means negroes. The Berber is an African but of the Semitic race.

GALLA TRIBE.

The Galla tribe next to Egypt, like the ~~Copts~~ are half way between the Egyptian and negro.

LOCAL CAUSES.

There are local causes which affect the complexion. On mountains, the complexion is fair; on lowlands it is dark. Draper "Cooking"

COLOR.

Even in color, there are shades of difference; as in ~~arranging the Nile~~.

BUSHMAN.

The Bushman has hair like a scrubbing-brush.

BLACK INDIAN

~~There is a black tribe of Indian in California; 2 negroes in 5 Himalayas.~~

OCEANIC TRIBES.

There is a vast variety among the Oceanic Islands. ~~In Africa there are as many~~

COINCIDENCE BETWEEN RACE & CLIMATE.

There is <sup>then</sup> <sup>sufficient</sup> ground for the doctrine of the diversity of <sup>species of</sup> men.

There is a close coincidence between race & climate. In wet lowlands there are black races.



End of 21<sup>st</sup> lecture, 1868

See p. 140

End 21<sup>st</sup> Lecture, 1870

At beginning of the hour, at University, - one student only, present;  
a few came afterwards; less than ten in the whole hour.

For the last two weeks my average class has  
not been more than ten. Dr. Allen,  
Wood & Hayden, about the same; Dr. Reese  
tells me his class is 22 or 23.

\* He expressed in answer to a question from my  
the conviction that my public advocacy of the  
Woman's Medical College had offended & reduced my class.



Even in India & California, black races exist

DRAPER'S THEORY.

THEORY OF THE UNITY.

Draper of New York, says that the sun ~~cooks~~ the complexion, which really does vary according to the intensity of the sun. *Thomas Pelissier Rouare.*

Two difficulties with which those who argue <sup>here especially</sup> for the unity, have <sup>had</sup> to contend are: →

1. ~~Dr. Morton's opposition.~~
2. The Antiquities of Egypt.

*under exception to  
Examination  
(critical!)*

DR. MORTON'S OPPOSITION.

Dr. Morton proved to his own satisfaction, that all American tribes were originally of the same race. While contending for the diversity, he did much towards establishing the theory of the unity.

ANTIQUITIES OF EGYPT.

On the tombs of Egypt, 4 races are depicted, proving that 3000 years ago, there were different races. However these tombs are not the oldest Egyptian remains. The history of that country has been extended back much further.

Womans Medical College had offended & injured my class.



Linnaeus, Buffon,

Cuvier, Alex. Humboldt, Sir W. Humboldt, Richard Owen,  
<sup>W. L. G.</sup> Chas. Lyell, Dana, J. P. Richard, D. Pickering of the Wilkes  
 U.S. Expl. Expedition, <sup>Houssay, a leading surgeon of Paris, not long since dead,</sup> <sup>King</sup> <sup>one of the first of French naturalists,</sup>  
 Sir John Lubbock, Pres. of Anthropology Soc. of London, & author of a  
 work on Prehistoric Man, ~~Dr. Huxley~~ <sup>the late</sup> Max Müller, Dawson.

Against, - the late Dr. S. Huxley, <sup>the late</sup> Prof. Knox of London,  
 Agassiz (in a peculiar way) Prof. Leidy, Gliddon the Egyptologist,  
 D. North <sup>D. H. Huxley</sup> <sup>& a few others of less note.</sup>  
 & Wallace? of Malay Archipelago.

End of 22<sup>nd</sup> Lecture, 1867.

End of 10<sup>th</sup> Lecture, 1872.

End of 25<sup>th</sup> Lecture, 1873.



Time had been allowed, even then, for variation to take place.

The Egyptian <sup>language</sup> is intermediate between the <sup>language of the</sup> Indo-European & the Semitic races.

The authorities for the theory of the unity of man, are:

Alex. Humboldt, Sir Wm. Humboldt, P. Cuvier, <sup>S.C.</sup> Lyell, <sup>Darwin</sup> Prichard & Pickering, ~~Lutshoff~~ ~~Lutshoff~~ ~~Alcock~~ ~~Alcock~~

It is more difficult now than formerly, to raise objections against the unity of man.

Darwin asserts that there is no evidence that the lion, dog, cat &c were not originally the same.

That climate & locality <sup>as well as descent</sup> make differences, is seen in the differences between the Italians, Germans, English and French.

The Arab has a symmetrical long face, with features strongly pronounced.

The Jew has large nose & mouth.

The Maltese has square face

The Italian is remarkable for

EGYPTIANS.

AUTHORITIES  
FOR  
UNITY.

DARWIN'S  
THEORY.

ARAB.

JEW.

MALTESE

ITALIAN.



Localized Diseases.

Malarial Fevers	Beri-beri	Barbadoes Leg?
Yellow Fever	Fungus-Toot	Egyptian Ophthalmia
Oriental Plague	Pellagra	Guinea-worm
Endemic Dysentery	Rice Polonica	Bilharzia
Goitre & Cretinism	Norwegian Leprosy	Broad Tape-worm
Shibet Laughing Disease.	<del>Lethargy of West Africa.</del>	
	For Blackboard	



+ Davis, polygenist, (cited by Quatrefages, *Revue des Cours Scientifiques* 1868, p. 558) gives a table of the weights of brains - of some 29 nationalities of men - the countenance (Dante), less of visage, across upper jaw, face in profile, specially of Irish.

1. English
2. Caffres
7. Esquimaux
8. Germans
9. Dahomans
13. Japanese
14. Frenchmen
20. Negroes
23. North American Indians
25. Hindus
26. Australians
27. Bushmen

Quatrefages uses, against the common disparagement of the Australians, the testimony of Stuart Gray, Dawson, Dumont d'Urville, & others, to prove that our stock is, *as our stock is*, we are *human in all at* *to wit as our stock is*, It is sup-  
 adual approx-  
 a race.  
 were ~~good~~ <sup>extreme</sup> *Triangular* <sup>faces!</sup>  
 the English  
 rowness of  
 gland. *the medium*  
 nguage, cli-  
 In south-  
 nds abound;  
 to.

Quatrefages shows that Lucas' theory of innate, in addition to heredité, is unwise, to explain any fact, the action of the medium, beginning with conception, being a more reasonable substitute?

When, then, for the reasons now given, we conclude to settle the fact that the human



Sunfish (*Pomotis vulgaris*) balances  
itself for several weeks over its eggs -

Sea-cat (*Pisnelodius catus*) swims  
along followed by its young, as a hen by

her chicks -

Salmon eggs <sup>not hatched</sup> at above 40° - & will  
when kept <sup>in ice</sup> ~~Agassiz~~ develop all the importance

of the fact that the same function is  
performed in many different modes, &  
by different organs & structures, in dif-

ferent animals of the same habitat,  
function then, he might say, is a factor;  
at least the need or purpose of a function is

so. Strength

Péron  
by dynamometer

1. English 71.4 & 16.3  
2. French 69.2 & 15.2  
3. Malay 58.7 & 11.6  
4. Australia 50.8 & 10.2  
5. Tasmania 50.5

Barbados Leg?

Egyptian Ophthalma

minia - worm

Bilharzia

Broad Tape-worm

large of West Africa.



often

SPANIARD  
GERMAN,  
FRENCHMAN.  
ENGLISHMAN

SCOT  
AMERICAN.

LINCOLN  
CLAY.

DIFFERENCE  
IN  
LANGUAGE.

the length of the oval of the countenance (Dante).  
The Spaniard, has largeness of visage.  
German, width of face, across upper jaw.  
Frenchman, convexity of face in profile.  
Englishman, <sup>fullness &</sup> roundness, especially of  
the lower jaw. <sup>Irish.</sup>  
Scott, <sup>Russians</sup> something like American. <sup>Welsh.</sup>  
American, triangularity of the lower  
part of the face. <sup>composite as our stock is,</sup>  
Even in this country, we are  
getting a cast of face. It is sup-  
posed <sup>by some</sup> that there is a gradual approx-  
imation to the Indian race.

A. Lincoln & H. Clay were <sup>extreme</sup> good  
specimens of Americans. <sup>Triangular faces!</sup>

One <sup>especially</sup> difference from the English  
is in the length & narrowness of  
the face: even in New England. <sup>complexion</sup>

As in <sup>complexion</sup> color so in language, cli-  
mate has an influence. In south-  
ern tongues, vowel sounds abound;  
in northern, consonants.

When, then, ~~for the reasons now given, we conclude~~  
~~to settle the fact that the human~~



\* Much longer for its total modification.  
 Negro character, for instance, — probably 1000  
 years. And probably not all can last again.

British in E. W. Indies have drunk too much  
 spirits, wine and beer; worse in India than  
 in England, Scotland or Ireland.

Hippocrates — Montesquieu — Michelet  
 Guyot — Buckle —



species is one, ~~most~~

ACCLIMATION.

~~This has an important bearing on acclimation. From this it follows that there can be no limit to the <sup>final</sup> adaptation of one stock, where another has been able to exist.~~

NEGRO.

We have an <sup>cooperative</sup> example in the negro's immunity from <sup>of race acclimation</sup> malarial <sup>& yellow</sup> fevers. When he comes to America, he loses this immunity in some generations.

It takes a very long time for the <sup>best</sup> acclimation of a race; & X

BEST MANAGEMENT.

The question which now arises? is, what management is best to effect this?

We must not transport the habits of one <sup>climate</sup> to another. This is what causes the great mortality of the English in India. Those get along best, who conform to the habits of the natives. <sup>in some respects</sup> Some climates are <sup>more than others for all races</sup> ~~intemperate~~.

ADAPTATION OF CONTINENTS.

Another subject is the <sup>adaptation</sup> of continents to different races.

The structure of the <sup>respective</sup> continents shows that they are adapted to certain stages of human development & history.



x Remarkable difference in the mental development of  
 ^ E. & W. Asia; Idealism or spiritualism of India,  
 ✓ Materialism or at least realism of China.  
 Nature has much to do with both — her  
 aspects impressing the minds of men from  
 generation to generation.

The mountains are vast, but they are  
 not impassable; they invite men to ascend and  
 to explore. But the <sup>before the use of the mariner's compass,</sup> ocean was, like a fate,  
 insurmountable, inexorable; it hemmed men in, and  
 drove them <sup>back</sup> upon their own resources. So the Brah-  
 minical <sup>in view of the Himalayas,</sup> thinkers held the <sup>extravagant of mythologies, & the most</sup> most mystical of  
 all philosophies; the Chinese <sup>near the Confucius Sea,</sup> thousands of  
 years ago, fastened their minds upon the present,  
 and the near past of their ancestors, whom they  
 worshipped. Their institutions, and even their arts, are  
 much the same <sup>now</sup> as they were in the days of  
 Confucius.



Western Central

great deserts,

CHARACTER

OF

ASIA,

OF

EUROPE,

*Empty*

OF

AMERICA.

TEUTONIC  
STOCK

In Asia, there is vastness: lofty table-lands, large mountains, &c. — abrupt contrasts of climate. This gives a ~~characteristic~~ <sup>tends to</sup> civilization, and ~~great barriers~~ <sup>keeping</sup> tribes apart. In Europe, there is a multitude of lesser contrasts. The rivers and mountains are less. The water and land intermingle. The races have a certain relation to each other. ~~There have been much submission, and yet~~ <sup>constant relations of conflicts and intercourse.</sup> Asia was the cradle of mankind. Europe is the school of man. America ~~has~~ <sup>is the arena for this martial activities.</sup> the greatest unity of all the continents. There is no succession of barriers east & west. The great rivers & mountains, run north & south. It has all varieties of climate. There is a tendency to fusion by gradations. N. Am. one nation by <sup>necessity</sup> physical. America is the place for the highest development. <sup>weathered the course of empire takes its way.</sup> The Teutonic stock, to which belong the Germans, English &c.



& Supremacy of Teutonic over one the most active  
 & intelligent of the Latin (so-called, - but mixed and  
 partly Celtic) races has been just now (1871) for some  
 time fixed by the Franco-Prussian war. But we  
 need not rejoice in this, at all events so far as it  
 is the temporary humiliation and enfeeblement of the  
 once powerful French nation. Rather let us hope  
 that both will, now, with advancement of civilization,  
 improve and grow strong together; the ~~oppositeness~~ <sup>hostile</sup> of  
 races, not promoting the highest development of either.  
 The English language is likely to become the universal language of the world.  
 As to the progress of the Teutonic race, no one has written  
 more eloquently than Prof. Carson, in the introduction to his history of  
 the medical department of the University of Pennsylvania. He says, -  
 "Conquerors of the Roman Empire, and the legitimate inheritor  
 of its glory, the race of Teutons has sent its sons broadcast  
 over the earth, and has its offshoots, as flourishing communities,  
 on every continent." "We are in this land to day [mainly] the  
 representatives of a civilization which has never lost a foot  
 of soil to which it has been transplanted, nor yielded, by force  
 of arms, to any rival or competitor for supremacy; for  
 wherever Anglo-Saxon domination has been carried, there it has been  
 permanently established."

End of 22<sup>nd</sup> Lecture, 1868.  
 American a composite race.



CLIMATE  
FOR SUITED  
CONSUMPTIVES.

always kept in temperate climates. ~~Other races have deviated & lost strength.~~  
 This lecture will be closed by a consideration of the Climates most suited for consumptives.

Statistics <sup>both in Europe & America</sup> show that it is an error to suppose that the coldest <sup>climates</sup> are the worst for consumption. It is nearness to the level of the sea which influences it. The higher a place, the less phthisis. Dampness — (Borditch) Buchanan

That is most wanted is a climate not very warm nor cold; dry & not subjected to extremes: equable.

The following places are considered as good & are <sup>much</sup> resorted to: Egypt by the English, especially in winter; perfect there. Algiers "Paris" French. South of France & Italy. Capers —

Malta, Madeira, Cuba, & Florida, <sup>from our Western States</sup> Some go north to Lake Superior.

Of the United States <sup>& Territories</sup> New Mexico has the least phthisis. <sup>on the whole</sup> The best residence is Florida in Winter, & Newport in Summer. Minnesota — Colorado for Asthma.

RESORTS  
for

HEALTH.

S. California

with N. Georgia

of S. California



WARMEST  
MATERIAL.

V. Stat.

CLOTHING

U. S. Census,

BATHS.

Mapes from

Su 152

Warmest Materials.

1. Wool, or furs.
2. Silk.
3. Cotton, e.g. muslin.
4. Linen.

Clothing

1. Must be sufficient.
2. Must not be excessive in amount or in pressure.
3. Properly distributed over the body.
4. Permeable to air & moisture.
5. Changed for cleanliness.

Baths

Cold	32°	to	70°	Fahr.
Cool	70°	"	85°	"
Tepid	85°	"	90°	"
Warm	90°	"	96°	"
Hot	96°	"	100°	"
Vapor bath	100°	"	120°	"
Hot air bath	130°	"	250°	"

Lecture  
1869

Medicated baths:—

Carbonic acidulous.

Sulphurous

Chalybeate, &amp;c.

Saline, &amp;c.



very conveniently, in the medical statistics of the U.S. Army,

## Lecture XXII.

MILITARY  
DIVISIONS  
OF  
THE  
UNITED STATES.

2 yrs of  
Dysentery  
COMPARATIVE  
MORTALITY.

The United States are divided into 3 military districts. 1st. the Atlantic, from the Atlantic Ocean to the Alleghany mountains. 2nd. the Middle, from the the Alleghany to the Rocky. 3rd. the Pacific, from the Rocky Mts. to the Pacific Ocean. The mortality <sup>from disease</sup> was, Atlantic, 33.4 in 1000; Middle, 82.19; Pacific, 10.76.

The cause of the greater mortality of the middle district, is the prevalence of malarial fever & <sup>communicable diseases</sup>.

MALARIAL  
FEVER.

<sup>Not only the agent but</sup> The intensity of ~~such~~ diseases is greater in certain places than in others. The farther south we go, the more remittent & pernicious fever we meet. ~~in~~ some places (as <sup>most of</sup> New England) where malaria formerly existed, are now exempt. The most northern limits of yellow fever, are Boston & Providence.

YELLOW  
FEVER

DYSENTERY.

<sup>local prevalence therefore must have some</sup> Dysentery has a local cause. There is often a great difference <sup>with</sup> in a couple of



Religion - several hundred cases in  
1870 - in N. Y. & Philadn

Before, ~~25~~ years ago  
(1844) Chymen  
in emigrants

o In Thibet, the "laughing disease"; some-  
times fatal in a few days.

Sleeping disease or lethargy, of W. Africa



it may be malarious;

may have dysentery. 137

miles. If a place is on low ground but ~~the~~ high ground is near it, ~~this~~ <sup>a moderate extent</sup> disease will prevail. This is seen in Germantown.

LIMESTONE WATER.

Limestone water is said to favor dysentery. It is a matter for inquiry.

MOUNTAIN FEVER.

Mountain fever, met with in the far West, is supposed to be a modification of typhoid fever.

RELAPSING FEVER.

Relapsing fever <sup>all recently</sup> was local in <sup>"Famine fever."</sup> Europe.

PLAGUE.

The localization of the plague in the East is well known. It is dying out. Its contagion is denied.

GOITRE.

Among the local diseases, not zymotic, ~~are~~ <sup>& with it, cretinism</sup> goitre. It has a combination of causes; want of light & air, excess of lime & magnesia in the water & <sup>local</sup> ~~endemic~~ <sup>intermittent</sup> local.

In India, <sup>vigors</sup> there is a prostrating anemia - Beri-beri. ♀

Mycetozoa

(Carter) Fungus disease of the limbs at Bombay.

PELAGRA.

Pellagra, a disease of the skin, is common in France, Spain, & Italy. It is incorrectly supposed to be



Bilharzia <sup>simplex</sup> hematobia  
 & Filaria sanguinis hominis - (1873)  
 (Lewis) India -  
 (Broad Tapeworm of Central Europe)

~~with the same~~



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POLISH  
TWIST  
OF THE HAIR.

NORWEGIAN  
LEPROSY.

LEPROSY.

Sandwich  
Islands  
1873

ELEPHANTIASIS.

OPTHALMIA.

PARASITES.

depressed white spots) It still exists  
in Syria and it is said even in South  
America. (Johnston's Physical Atlas). Stephany

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Parasites

are common in Africa.  
The Guinea worm, 6 ft. long gets into  
the cellular tissue. It is ~~difficult~~ in-  
duced to leave the body, by going into  
running water. Bathing often is the  
cause of their getting in the flesh.



\* <sup>pellagra</sup> Vernous, after long enquiry, asserts Zeism  
 for him, as maize "altère par le verdet"

Tonga et autres ulcères (occurring once or  
 in an individual) peculiar native of New Caledonia  
 Disease of heart & arteries very rare among  
 Hindus - Cancer rare in New Zealand  
 S. Africa, & India, & Canada P. Broca  
 Anthropol. Rev. Aug. 1863 p. 200.

See Memoirs of Tom Hood?  
Syphilis not common in Pacific Islands -

Bilharzia <sup>simple</sup> hematobia  
of the blood Sanguis hominis - (1873)  
(Lewis)  
India  
Billharzia hematobia (Browl) Taperman  
of Central Europe



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POLISH  
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OF THE HAIR.

NORWEGIAN  
LEPROSY.

LEPROSY.

Sandwich  
Islands  
1873

ELEPHANTIASIS.

although not peculiar to any country  
OPHTHALMIA.

About

PARASITES.

depressed white spots. It still exists  
in Syria and it is said even in South  
America. (Johnston's Physical Atlas). Stephens  
Elephantiasis of the Arabs is a thick-  
ening of the limbs. It exists even in  
America: Barbadoes [Nov. 15, 1871]

MEDICAL

BOOKS AND PAMPHLETS RECEIVED.

Clinical Examination of Urine, with a Description of a Con-  
venient Apparatus for its Speedy Analysis. By Reuben A.  
Vance, M.D.

A Contribution to the Treatment of the Versions and Flexions  
of the Unimpregnated Uterus. By Ephraim Cutter, A.M.,  
M.D. Reprinted from the Journal of the Gynecological  
Society.

Annual Announcement of the Trustees and Faculty of the  
Medical College of the State of South Carolina. Session of  
1871-72.

the Use of the Ophthalmoscope in Diseases of the Nerv.

One out of every  
are two cause  
out to avoid  
is the damp  
the glare of the sun  
Parasites are common in Africa.  
The Guinea worm, 6 ft. long gets into  
the cellular tissue. It is in-  
duced to leave the body, by going into  
running water. Bathing often is the  
cause of their getting in the flesh.



D. Roussel of Paris, after 20 years' investigation, (aided by Dr. Balardini of Brescia) concludes that it is maize food that causes pellagra - (Zeism) - but maize used <sup>when</sup> imperfectly ripened, & injured by a parasitic mould - verderame - (and goes to rot) - L'Union Médicale Aug. 18. 66

Tongue of cancer ulcer (occurs once in a while) peculiar name Non Calcedonia

Disease of

THAMES.

[Nov. 15, 1871]

Unders -  
S. Africa,

See Memoirs  
Syphilis not com

plied by the name, the principal and sole symptom is lethargy. The patient, usually an adult male, is seized, without premonitory symptoms, with drowsiness, which continues to increase in spite of all efforts to throw it off, until he sinks into a profound and seemingly natural sleep, which continues for about twenty-one days, when death occurs. Throughout the patient preserves a quiet and peaceful countenance, may be easily roused for a short time, will take nourishment, and generally answers a few questions in a rational manner.

The pulse, respiration, and temperature remain normal throughout, the pupil maintains its normal size, and the urine and feces are regularly voided.

Remedies avail nothing, and post-mortem examinations by competent men reveal no lesion.

Bilharzia homonatolia  
& filaria sanguinis hominis (Lewis) (1873)  
Leishmania (Broad Tapeworm of Central America)



although investigation makes it probable that a disease of the corn (Cauliflower & most) may account for it.

POLISH TWIST OF THE HAIR.

Poland twist of the hair, is <sup>commonly stated to be</sup> caused by a minute vegetation. Some dermatologists, however, <sup>almost or quite</sup> say it is only <sup>ectoparasitic</sup>.

NORWEGIAN LEPROSY.

Norwegian leprosy is peculiar to fishermen. <sup>Spisalsked</sup>

LEPROSY.

Sandwich Islands 1873

Leprosy <sup>the Bible</sup> is obscure in <sup>its</sup> history. (It causes depressed white spots.) It still exists in Syria and it is said even in South America. (Johnston's Physical Atlas). <sup>Stephens</sup>

ELEPHANTIASIS.

Elephantiasis of the Arabs is a thickening of the limbs. It exists even in America. <sup>Barbours</sup> neighbors, who, as on birth to a child, which she had murdered.

OPHTHALMIA.

<sup>although not peculiar to any country</sup> Ophthalmia. PITTING FROM SMALLPOX.—Dr. Rendle, in a letter to *The Practitioner* for October, recommends the application of cotton-wool to the face and neck of patients suffering with smallpox to

About One out of every are two caused out to avoid

infected persons

is the dampness of Lower Egypt & the glare of <sup>the sand in</sup> Upper Egypt.

PARASITES.

Parasites are <sup>rather numerous</sup> common in Africa. The Guinea worm, 6 ft. long gets into the cellular tissue. It is <sup>often</sup> induced to leave the body by going into running water. Bathing often is the cause of their getting in the flesh.



Dr. Roussel of Paris, after 20 years' investigation, (aided by Dr. Balardini of Brescia) concludes that it is maize food that causes pellagra - (Zeism) - but maize used <sup>when</sup> imperfectly ripened, & injured by a parasitic mould - verderame - (analogous to ergot) - L'Union Medical Aug. 18. 66

~~Tongue of cancer ulcer (occurs once in a while) peculiar name of New Caledonia~~

~~Disease of~~

~~India - S. Africa~~

See Memoirs  
~~Syphilis not com~~

LETHARGUS.—Dr. Thomas H. Bailey publishes in the New York Medical World for October, 1871, an account of this "singular and invariably fatal malady, peculiar to the negroes of certain districts on the western coast of Africa." As im-

The pulse, respiration, and temperature remain normal throughout, the pupil maintains its normal size, and the urine and feces are regularly voided. Remedies avail nothing, and post-mortem examinations by competent men reveal no lesion.

*Billharzia haematobia*  
*Philum sanguis hominis* (Lewis)  
*India* (1873)

(Broad Tape worm of Central America)

~~Billharzia haematobia~~  
~~Philum sanguis hominis~~  
~~India~~  
~~(1873)~~



although investigation makes it probable that a disease of the corn (Cauliflower to most) may account for it



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*Sandwich  
Islands  
1873*

Leprosy is obscure in <sup>the Bible</sup> history. (It causes depressed white spots). It still exists in India and it is said even in South America. (Johnston's Physical Atlas). <sup>Stephens</sup>

ELEPHANTIASIS.

Elephantiasis of the Arabs is a thickening of the limbs. It exists even in America: Barbadoes &c.

although not peculiar to any country particularly

Optthalmia is common in Egypt. <sup>from there</sup> About One out of every six <sup>for this purpose</sup> are blind. There are two causes. One is, putting an eye out to avoid the army and the other is the dampness of Lower Egypt & the glare of Upper Egypt. <sup>the sand in</sup>

PARASITES.

Parasites are common in Africa. The Guinea worm, 6 ft. long gets into the cellular tissue. It is <sup>rather numerous</sup> induced to leave the body by going into running water. Bathing often is the cause of their getting in the flesh.



End of 23<sup>d</sup> Lecture 1867  
 End 22<sup>d</sup> Lecture, 1870

Tennessee, W. Virginia, South Ohio Indiana;  
 uncommon in New England & the East States.

End of 20<sup>th</sup> Lecture, 5 mo. 11<sup>th</sup>, 1874.

The largest class I have ever had

so far on in the course;

Sometimes 30 to 40

present.

Sept. 12 ~

1875, at same period of the  
 Course, class about as large as in  
 1874.

my last course, 1876, was very possible feeling  
 fully attended and with the best towards me.  
 on the part of our class



PHILADELPHIA COUNTY MEDICAL SOCIETY.



End of 23<sup>d</sup> Lecture 1867  
 End 22<sup>d</sup> Lecture, 1870

\* Stone & gravel are common in  
 England, France, Denmark, Iceland  
 Egypt — (to Russia) — & North Italy  
 e.g. Rome. 80 per ct.  
 Rare in Sweden, Norway, & some  
 parts of Austrian dominions.  
 Common in Kentucky.

Tennessee, W. Virginia, South Ohio Indiana;  
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